

**Interstate Migration and Employer-to-Employer  
Transitions in the U.S.: New Evidence from  
Administrative Records Data**

by

**Henry Hyatt  
U.S. Census Bureau**

**Erika McEntarfer  
U.S. Census Bureau**

**Ken Ueda  
National University of Singapore**

**Alexandria Zhang  
Pew Charitable Trusts**

This paper is a revised version of *Interstate Migration and Employer-to-Employer Transitions in the U.S.: New Evidence from Administrative Records Data (CES 16-44)* from October, 2016. A copy of the original paper is available upon request.

**CES 16-44R**

**May, 2018**

The research program of the Center for Economic Studies (CES) produces a wide range of economic analyses to improve the statistical programs of the U.S. Census Bureau. Many of these analyses take the form of CES research papers. The papers have not undergone the review accorded Census Bureau publications and no endorsement should be inferred. Any opinions and conclusions expressed herein are those of the author(s) and do not necessarily represent the views of the U.S. Census Bureau. All results have been reviewed to ensure that no confidential information is disclosed. Republication in whole or part must be cleared with the authors.

To obtain information about the series, see [www.census.gov/ces](http://www.census.gov/ces) or contact Christopher Goetz, Editor, Discussion Papers, U.S. Census Bureau, Center for Economic Studies 5K028B, 4600 Silver Hill Road, Washington, DC 20233, [CES.Working.Papers@census.gov](mailto:CES.Working.Papers@census.gov).

## **Abstract**

Declines in migration across labor markets have prompted concerns that the U.S. economy is becoming less dynamic. In this paper we examine the relationship between residential migration and employer-to-employer transitions using both survey and administrative records data. We first note strong disagreement between the Current Population Survey (CPS) and other migration statistics on the timing and severity of any decline in interstate migration. Despite these divergent patterns for overall residential migration, we find consistent evidence of a substantial decline in economic migration between 2000 and 2010. We find that composition and the returns to migration have limited ability to explain recent changes in interstate migration.

**Keyword:**

**JEL Classification:**

---

\* We thank Rob Valletta, James Spletzer, and participants in the 2016 Allied Social Science Association conference and the U.S. Census Bureau research lunch for helpful comments and suggestions. This research was principally conducted while Ken Ueda and Alexandria Zhang were employees of the U.S. Census Bureau. Any opinions and conclusions expressed herein are those of the authors and do not necessarily represent the views of the U.S. Census Bureau. All results have been reviewed to ensure that no confidential data are disclosed.

Contact -- Hyatt: [henry.r.hyatt@census.gov](mailto:henry.r.hyatt@census.gov), McEntarfer: [erika.mcentarfer@census.gov](mailto:erika.mcentarfer@census.gov), Ueda: [ueadak@econ.umd.edu](mailto:ueadak@econ.umd.edu), Zhang: [azhang4@jhu.edu](mailto:azhang4@jhu.edu).

# 1 Introduction

The U.S. labor market is frequently lauded for its dynamism, with high rates of job creation, job destruction, and worker turnover. Yet many indicators of labor market fluidity have declined in recent decades. Downturns in residential migration, together with lower rates of hiring, separations, and employer-to-employer transitions, have raised concerns that labor markets are becoming more rigid (Hyatt and Spletzer (2013); Davis and Haltiwanger (2014); Molloy et al. (2017)), prompting concern among policymakers (Yellen (2014); Economic Report of the President (2015)). Increased labor market rigidity would have significant consequences for the U.S. economy, as labor and capital flows are the primary means by which the economy adjusts to negative shocks and returns to full employment. Labor flows are also a principal means by which employment is reallocated from less to more productive firms and sectors of the economy.<sup>1</sup> If labor market fluidity has declined, then the U.S. is likely to experience more prolonged recessions and slower productivity growth.

In this paper, we use survey and administrative data to study the relationship between declining migration and job change in the U.S. since 2000. We first consider the sharp decline in the migration rate in the Current Population Survey (CPS) which has received considerable attention in the economics literature.<sup>2</sup> We note differences between residential migration rates using the CPS and other data sources, and explore possible explanations using a unique dataset of CPS responses matched with administrative records on migration. We find more agreement among data sources on changes in economic migration in recent decades, only a fraction of which can be explained by changing worker and firm composition. We also explore the earnings gains of migrants and find that changes in these returns to migration also have limited explanatory power.

The U.S. has long been considered to be a highly mobile society. However, migration

---

<sup>1</sup>Blanchard and Katz (1992) argue that regional labor markets adjust to negative labor market shocks primarily through migration flows. Dahl (2002) and Wozniak (2010) show that tight labor markets generally attract more migrants. Haltiwanger et al. (2017b) show that employer-to-employer moves account for a disproportionate share of the differential growth of high productivity firms.

<sup>2</sup>See, among others, Molloy et al. (2011, 2016, 2017), De Loecker and Eeckhout (2017), Kaplan and Schulhofer-Wohl (2017), and Karahan and Rhee (2017).

within the U.S. as measured by the CPS has been declining for decades, reaching historic lows in the wake of the Great Recession (Molloy et al. (2017)). Regional patterns have also changed in recent decades, with less out-migration from Northern and coastal cities and less in-migration into Western and Sunbelt states (Frey (2009)). Changing family, cultural and technological factors may have contributed to a decline, including the rise of dual-earner couples, declines in the divorce rate, and increases in telecommuting (Cooke (2011, 2013)). Our focus here is on the contribution of macroeconomic factors - particularly declining rates of job change - on migration rates.

As we begin our empirical investigation, we must first contend with the fact that migration rate in the CPS has diverged markedly from other data sources have in recent years.<sup>3</sup> We use a unique dataset that links CPS respondents to longitudinal administrative records from the Internal Revenue Service (IRS) on their place of residence. This allows us to assess the extent to which the discrepancy in migration rates from the CPS and administrative records data can be explained by composition, measurement error, or other survey effects. We find that an increasing discrepancy between CPS responses and respondent administrative records drives the divergence between the IRS and CPS migration series. These findings suggest that researchers should exercise caution when relying on CPS to study migration trends.

When we turn our focus to economic migration, we find more similar levels and trends in the CPS and administrative records data. In both datasets, the rate of cross-state economic migration declines in the first decade of the twenty-first century. The economic migration rate fell from 0.9% to 0.5% in the CPS between 2000 and 2010, while in the administrative records data, it fell from 0.8% to 0.5%. We show that cross-state moves motivated by new employment opportunities account for well under half of overall residential migration: one-fourth of all cross-state moves in the administrative records data, and one-third of such moves in the CPS data. Meanwhile, only about a tenth of all employer-to-employer transitions have a coincident residential move across states. These results highlight that interstate migration and employer-to-employer transitions

---

<sup>3</sup>Such differences in the trend in interstate migration persist even after we apply the standard corrections proposed by Kaplan and Schulhofer-Wohl (2012).

are substantially different concepts. They also show that researchers should exercise caution when explaining changes in overall migration using arguments specific to economic migration.

Having documented a sizable decline in economic migration between 2000 and 2010 in both survey and administrative records data, we turn to the question of why. We first perform a shift-share analysis, to identify to what extent the decline in migration is driven by changes in the composition of workers and firms over this decade. The aging of the workforce explains around one tenth of the decline, and the fall in the employment rate may explain somewhat more. No other demographic or economic characteristics have much explanatory power. Overall, our shift-share analysis suggests the decline in economic migration is not driven by changes in firm or worker composition. These results are consistent with the findings of earlier papers, which found that declines in migration and labor market churn are only partly explained by changes in worker and firm composition (Hyatt and Spletzer (2013); Molloy et al. (2016)).

We next examine trends in earnings changes for interstate migrants to explore other potential explanations for changes in economic migration since 2000. One natural explanation for declining economic migration would be a decline in the returns to migration.<sup>4</sup> On the other hand, if increased divergence in housing costs deters migration across markets, we might expect earnings gains for migrants to trend upward, as the pool of migrants becomes more selective toward those with greater earnings gains from migrating.<sup>5</sup> Our evidence neither favors lower returns to migration, nor higher costs of migrating. We find substantial cyclicity but no clear trend in earnings gains for migrants in our data. Consistent with the findings of Hyatt and McEntarfer (2012), the returns to job change more generally are cyclical but also do not exhibit an obvious trend decline. From these

---

<sup>4</sup>Kaplan and Schulhofer-Wohl (2017) argue that interstate migration has declined because of a decline in the geographic specificity of the returns to working in particular occupations. Lacking administrative records data on occupation, we cannot make more progress in evaluating that mechanism here. Molloy et al. (2017) find some evidence that the net benefit to changing employers has fallen in recent years using survey data.

<sup>5</sup>Rising house prices may have deterred migration following the Great Recession, through housing lock when the housing bubble burst. But empirical studies have generally found the effect of negative equity on migration in the Great Recession was quite small: for example, Schulhofer-Wohl (2010), Valletta (2013), and Nenov (2015). Other researchers argue that high housing costs in cities may have deterred potential migrants from other parts of the country (Hsieh and Moretti (2015)).

patterns we infer that the fall in economic migration in the late 2000s is likely related to cyclical changes in labor market churn, and not a systematic decline in either returns to job change or the cost of migration.

The remainder of the paper proceeds as follows. In Section 2, we describe the data sources we utilize in our investigation. In Section 3, we compare the trends in residential migration among these data sources, and use survey responses linked with administrative records data to investigate the source of discrepancies between CPS and IRS migration statistics. In Section 4, we explore the relationship between trends in employer-to-employer transitions and interstate economic migration. Then, in Section 5 we conduct shift-share decompositions of the changes in the residential and economic migration rates to assess the role of observable and unobservable factors in explaining these changes. We also calculate earnings changes associated with economic migration to assess the cyclicity of and potential trend changes in the returns to migration. We end our paper in Section 6 with a summary of our results and suggestions for future research.

## 2 Data

We use a number of survey and administrative records data sources in our analysis. Whenever practical, we restrict our sample to the civilian population aged 16 to 64, excluding the armed forces and individuals living in group quarters. As some of our key data are only available from 2000 forward, much of our analysis will focus on these more recent years, but we discuss pre-2000 trends as data permit.

### 2.1 Current Population Survey (CPS)

The March CPS Annual Social and Economic Supplement (ASEC) provides several decades of detailed labor force and income data for a representative sample of the U.S. population.<sup>6</sup> It asks respondents where they lived one year ago, along with their rea-

---

<sup>6</sup>We download the CPS ASEC data from the University of Minnesota’s Integrated Public Use (IPUMS) Microdata Series (Ruggles et al. (2010)). As recommended by Kaplan and Schulhofer-Wohl (2012), we exclude imputed migration responses, which change discontinuously in the early 2000s due to changes in procedures for handling non-response and exclude individuals with migration responses assigned (al-

son for migrating. These features make it an attractive data source for studying labor dynamics and migration flows.

The CPS is also widely used to measure rates of job change. Employer-to-employer transitions can be measured in the CPS in both the ASEC and the monthly CPS. The CPS ASEC began asking a retrospective question on the number of jobs a respondent held in the last year starting in 1976. If the respondent reported working for more than one employer in the last year, this suggests that the worker transitioned from employer-to-employer. The time trend of this proxy has been analyzed by Farber (1999), Stewart (2007), Hyatt (2015), and Molloy et al. (2016). In addition to this proxy measure, it is possible to measure the employer-to-employer transition rate directly from the monthly CPS data, following Fallick and Fleischman (2004).<sup>7</sup>

In some of our analysis, we also use CPS ASEC microdata linked with address data sourced largely from administrative records (federal tax returns). We use this linked microdata to examine growing discrepancies between CPS and IRS migration rates. We describe the administrative records data later in detail later in this Section.

## 2.2 Internal Revenue Service (IRS) Migration Data

The IRS Statistics of Income migration data also provide several decades of data. IRS migration rates are calculated from year-to-year changes in residence location based on individual tax returns. A key advantage of IRS migration data is that they are drawn from the population of tax filers rather than a sample of households, and so allow for more granular study of migration flows than survey data. However, there are drawbacks to using IRS migration statistics exclusively to study migration trends. The frame of the IRS data is tax filers, not households, and no adjustments are made to make the statistics nationally representative: for example, non-filers tend to be younger and have lower incomes, and may have higher migration rates. Recent improvements in the migration statistics starting in 2011 include detailed demographic breakouts and better capturing

---

located) from the householder (i.e., primary respondent) if the householder's response is imputed.

<sup>7</sup>We download the CPS monthly data from NBER at [http://www.nber.org/data/cps\\_basic.html](http://www.nber.org/data/cps_basic.html) (last accessed: May 18, 2016).

of late filers, but result in a break in the time series after that year (Internal Revenue Service (2012)).

## 2.3 American Community Survey (ACS)

The ACS is a large, nationally representative, cross-sectional survey of the United States, available from 2001 forward.<sup>8</sup> To identify migrants, the ACS asks a retrospective question that is similar to the one asked in the CPS ASEC. There are some notable differences between the two surveys, however. Sample sizes in the ACS are larger than the CPS, although obviously smaller than the counts that underlie the IRS tabulations. Also, the ACS may pursue non-respondents more intensively than the CPS, which might lead to higher migration rates in the ACS (Koerber (2007)). An important difference between the ACS and CPS for our purpose is that the ACS neither asks migrants their reason for moving nor collects information on employer-to-employer transitions, so we are unable to measure the rate of economic migration using the ACS.

The ACS has a somewhat different residency concept from the CPS. The frame of CPS respondents is individuals at their usual residence, while the ACS normally includes those who are at sampled housing units for at least two months and have no other usual residence (at the time of the survey, or those who plan to remain for at least two months, see U.S. Census Bureau (2014)). In the ACS, housing units, apart from group quarters, where no one meets that requirement, are considered vacant. The CPS, by contrast, includes individuals in a sampled housing unit as long as they do not have a usual residence elsewhere. As a result, the ACS may not capture a part of the population that moves more frequently (although we later show that the ACS migration estimates

---

<sup>8</sup>We download ACS data for the year 2001 onward from the IPUMS website at <https://usa.ipums.org/usa/> (last accessed: May 18, 2016) (Ruggles et al. (2010)). Kaplan and Schulhofer-Wohl (2017) exclude pre-2005 ACS data from their study due to concerns about changes in survey methodology that occurred between 2001 and 2005, the year in which it reached its final size as a 1-in-60 sample of the U.S. population. However, we include estimates for pre-2005 years here as changes in the ACS sample size should only affect the precision of estimates. We also found that the pre-2005 ACS estimates are highly correlated with other published migration statistics. We also use data for the year 2000 from the Census 2000 Supplemental Survey, the precursor to the ACS, which serves as our initial year of ACS migration data. An ACS migration rate for 2000 is calculated using data from <http://www2.census.gov/programs-surveys/acs/data/pums/2000/> (last accessed: November 3, 2017).



are consistently higher than the CPS). The IRS migration series also has no minimum residency requirement, but, as discussed above, it lacks migrants who do not file taxes.

Another distinction between these surveys is that the ACS surveys respondents throughout the year, while the CPS ASEC is administered in March. This difference may cause divergence between the CPS and ACS if there is a large degree of recall bias and seasonality in migration. The timing of the IRS is also broadly consistent with that of the CPS ASEC since the tax filing deadline is April 15th and so migration rates roughly compare addresses in consecutive Aprils. Since the IRS migration series uses administrative records rather than survey responses, recall bias is not an issue in the IRS itself, but recall bias in the survey data may cause differences.

The ACS and CPS both have an additional relationship to the IRS migration statistics. Like most household surveys conducted by the U.S. Census Bureau, survey responses are assigned weights based on both sampling probabilities (particular states, neighborhoods, or populations are included in the survey with different frequencies) and population estimates (Lent et al. (1994), U.S. Census Bureau (2010)). The population estimates provide annual total counts by age, gender, race, and ethnicity. These estimates use the counts from the most recent decennial census, adjusted for births, deaths, and migration. Net migration in an area is sourced from several administrative records sources, including migration implied by linked IRS tax returns (U.S. Census Bureau (2017)). For example, if migration in a particular U.S. state as captured by administrative records sources exceeds the change in its number of housing units over the course of a year, this might lead to an increase in the weights applied to that area. The weights for the population estimates are only differentially applied by location, age, gender, race, and ethnicity, and do not consider migration responses. We therefore expect the impact of this weighting on measured migration rates to be small.

## **2.4 Longitudinal Employer-Household Dynamics (LEHD)**

We make extensive use of the linked employer-employee microdata maintained by the LEHD program at the U.S. Census Bureau (Abowd et al. (2009)). The LEHD data con-

tain longitudinal information on residential location and employment, created by linking multiple administrative records data sources with census and survey microdata. The core LEHD data consist of quarterly jobs (i.e., particular employer-employee combinations) data collected from state unemployment insurance programs. These job records are linked to Census survey and administrative records data for characteristics of the workers (including place of residence), and employers. LEHD data covers about 95% of private sector employment, as well as state and local government. Self-employment earnings, the armed services, and civilian federal employment are outside the LEHD frame. The availability of LEHD job-level data varies by state, so we restrict our analysis to the set of states with jobs data beginning in 1999.<sup>9</sup>

Information on individual residence in LEHD data comes from the Composite Person Record (CPR). The CPR is constructed from multiple administrative sources, but for most individuals, residence information is sourced from federal tax returns (Leggieri et al. (2002)). Thus our residence microdata is very similar to the microdata used to produce IRS migration statistics. If the residential address in the CPR changes, we assume that the migration occurred between April of that year and the previous year. Our measure of migration has similar strengths and drawbacks to the IRS migration statistics, e.g., near universal coverage of tax filers, timing issues when individuals file taxes early or late, etc.<sup>10</sup>

A main objective of this paper is to evaluate the role of declining job mobility in explaining the decline in migration. To identify employer-to-employer transitions in the LEHD data, we link the main jobs in each quarter of a worker’s employment history. When a worker separates from a job and begins work at a new job in either the same

---

<sup>9</sup>The 34 states used in our analysis are California, Colorado, Connecticut, Delaware, Florida, Georgia, Hawaii, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Maine, Maryland, Minnesota, Missouri, Montana, Nevada, New Jersey, New Mexico, North Carolina, North Dakota, Oregon, Pennsylvania, Rhode Island, South Carolina, South Dakota, Tennessee, Texas, Virginia, Washington, West Virginia, and Wisconsin. These states accounted for about 74% of the U.S. population in 2010.

<sup>10</sup>Production of the CPR was discontinued after 2010, and replaced with a new file, called the Residence Candidacy File (RCF). Migration rates increase sharply when the RCF replaces the CPR. The IRS introduced multiple methodological improvements that cause migration rates to increase discontinuously by a similar amount in 2011. For much of our analysis, we will focus on the 2000-2010 period because of this issue.

quarter or the next, we classify this as a employer-to-employer move.<sup>11</sup> We define a particular migration in the LEHD data as “economic” if an employer-to-employer transition occurs at the same time as a residence change, and both the new employer and the new residence are in a different state.<sup>12</sup> This approach has a few limitations. An unemployed worker who moves to a better labor market to search for work will not necessarily be classified as making an economic move if the unemployment spell is sufficiently long. We will also classify some moves as being economic that may be principally driven by other factors, such as when someone takes a new job to be closer to family. We will also miss some economic migrations if either the new or old job is not covered by state unemployment insurance, including federal workers and the self-employed.

### 3 Interstate Migration in the U.S., 1981-2014

We begin by comparing residential migration rates in the CPS, ACS, IRS, and LEHD data from the early 1980s to 2014, as shown in Figure 1. Note that we focus on interstate migration throughout, which has received considerable attention in the economics literature.<sup>13</sup> The CPS and IRS migration data have the longest time series and both show a decline from about 3.1% in 1986, to 2000 at 2.4% in the CPS and 2.6% in the IRS series. Starting in 2000, however, trends in the CPS and IRS migration statistics diverge substantially. Interstate migration in the CPS falls sharply, to 1.4% by 2010. The IRS migration rate in recent decades is more procyclical, rising to 2.7% in 2006 before

---

<sup>11</sup>LEHD employer-to-employer transitions in this paper are calculated using the same methodology as Hyatt and McEntarfer (2012) and Haltiwanger et al. (2017a), which is similar to the methodology used to calculate the Census Bureau’s Job-to-Job Flows statistics (Hyatt et al. (2014)) but identifies main jobs among all jobs held during the quarter, rather than the subset of jobs that span at least two consecutive quarters. Rates of job change in the public use Job-to-Job Flows data are lower but show similar cyclical patterns.

<sup>12</sup>Specifically, we classify a move as economic if (1) the worker changes employers between the second quarter of the previous year and the first quarter of the current year and the new employer is located in a different state, and (2) the worker changes state of residence in the administrative records data in that year.

<sup>13</sup>In Appendix Figures A1 and A2 we show that Metropolitan Statistical Area (MSA) and county level migration rates, respectively, show similar trends for each of these four series. Naturally, MSA and county level migration rates have higher levels than interstate migration. Note that the CPS continues to show more of a decline in recent decades than the other series using these alternative migration definitions. In Appendix Figure A3, we show that limiting the CPS to a subset of states as we do for the LEHD data impacts the level but not the trend of the interstate migration rate.

falling to 2.2% by 2010. Migration in the ACS closely mirrors the levels and trends in the IRS data. As expected given the similar data source, the rate calculated from the LEHD closely mirrors the IRS migration rate.<sup>14</sup> Economists have proposed that the sharp decline in the CPS interstate migration rate is evidence that U.S. labor markets are becoming more rigid. However, Figure 1 shows that a precipitous and sustained post-2000 decline is a feature unique to the CPS migration series.

We use a unique data source of CPS responses linked with LEHD administrative records on place of residence to explore this divergence further. This linked data allows us to explore several plausible reasons that migration might be falling more steeply in the CPS, including more respondents who do not report changes in residence (i.e., respondent error), more migrants who not respond to the survey (i.e., non-response error), or more migrants filing taxes (i.e., changes in the frame of tax filers). The CPS respondent records matched to LEHD records allow us to compare self-reported migration with what administrative records indicate about the location of respondents' residence in the survey year relative to the prior year. Given that CPS is administered in March and asks about the previous year, and that the administrative records compare an address held around April 15th to an address held around the same time in the previous year, these data sources should usually agree at the individual level. But not all CPS respondents are expected to have filed taxes in two consecutive years, and so the matched CPS-LEHD data therefore provides evidence on whether survey error or changes in the frame of tax filers are driving a wedge between the two series.

Figure 2 compares interstate migration rates for CPS respondents as measured by survey response or by administrative records data for the years 2002-2009, where the divergence between the CPS and the other data sources is most pronounced. Figure 2 shows that the widening gap between self-reported migration and the administrative records data is apparent even within the linked subset, with self-reported migration rates falling 0.6 percentage points and the migration rate calculated from the administrative

---

<sup>14</sup>We show the correlations between the series shown in Figure 1 in Appendix Table A1. Despite the divergent trends, the intertemporal correlation between the CPS and the other series are still quite high (between 0.66 and 0.85).

records is relatively constant, falling by 0.1 percentage points overall and by 0.3 percentage points in the linked data. This evidence rules out changes in the frame of tax filers, as well as unit non-response bias in the CPS, as primary causes of the divergence of the CPS migration rate from administrative records tabulations.

In Figure 3, we examine this discrepancy further, creating three separate migration rates. The first rate is calculated for CPS respondents who report an interstate migration to the CPS but have no corresponding change in state of residence in the administrative records data (the dashed line), change state of residence in the administrative records data, but do not report a cross-state move to the CPS (the solid line), and are migrants in both data sources (the dotted line). Under a third of CPS migration responses are not present in the administrative records data, while almost half of migrations present in the administrative records data are not reported by CPS respondents.<sup>15</sup> This evidence helps explain why the CPS interstate migration rate disagrees with the rate derived from administrative records sources: the share of respondents who report migrating in the CPS but do not migrate in the administrative records has fallen over time, while the share of migration that appears in the administrative records but not in the CPS has increased, especially around 2005. This growing share drives the divergence between the two series.

## 4 Job Change and Economic Migration

### 4.1 Job Change in Recent Decades

Before looking at economic migration specifically, we first compare trends in overall job mobility in the CPS and LEHD data. Figure 4 shows quarterly employer-to-employer flow rates calculated from the monthly CPS, LEHD data, and an annual rate calculated from the CPS ASEC, defined as the fraction of those employed who worked for multiple

---

<sup>15</sup>We explore the extent to which timing issues impact the mismatch in Appendix Table A2. Timing issues (especially late filers) account for almost one-half of CPS migrations that do not appear in the administrative records data that year. We also investigate whether one-time changes in the administrative records data - which may be due to nonsurvey error - explain many of the cases where the migration appears only in the administrative records data in Appendix Table A3, these account for only 15% of mismatches.

employers in the last year. Despite the divergence in residential migration rates in these two data sources, here all three measures are procyclical and track each other very closely between 2000 and 2010. Differences widen after 2010 with the LEHD data showing more of a recovery than the CPS. The LEHD employer-to-employer transition rate reached a high of 7.5% in 2000, declined to 5.8% in 2003, recovered to 6.6% by 2005, reached a low of 4.4% during the 2007-2009 recession, and rebounded to 5.8% by the end of 2013. The ASEC annual job transition rate is also cyclical, but shows no evidence that job transition rates were on a trend decline during the 1980s and 1990s.<sup>16</sup> Likewise, it is difficult to argue that declining migration rates in the CPS and IRS during the 1980s and 1990s can be associated with an obvious corresponding fall in job mobility.<sup>17</sup> As emphasized by Molloy et al. (2016, 2017), the more dramatic declines in these employment reallocation rates after 2000 resemble the coincident decline in the CPS interstate migration rate.

## 4.2 Economic Migration

We begin our analysis by assessing the extent to which residential migrations are motivated by job opportunities. Recall that we define an “economic migration” in the CPS as one where the primary reason for moving was a new job or job transfer, while in the LEHD data we classify an interstate migration as economic if there is a concurrent interstate employer-to-employer transition. These economic migration rates are shown in Figure 5. Economic migration accounts for approximately a third of total residential migration in the CPS, and one fourth in the LEHD. Given the stronger decline in interstate migration in the CPS, we are surprised to find that levels and trends for interstate economic migrations are much more similar in the CPS and LEHD data.<sup>18</sup>

---

<sup>16</sup>Data sources on labor market fluidity do not show a consistent trend over this period. Depending on the series, employment reallocation rates may have increased, stayed roughly constant, or declined. Decker et al. (2014) and Molloy et al. (2016) suggest that labor reallocation may have declined from the 1970s to the 1990s. Moscarini and Thomsson (2007) and Kambourov and Manovskii (2008) provide evidence that mobility across industries and occupations increased over the span of those decades, while Hyatt (2015) and Hyatt and Spletzer (2016) provide evidence that labor reallocation had little trend over this same period.

<sup>17</sup>Despite diverging trends, data sources on migration and job change are all procyclical and therefore are highly correlated. Correlations between different employer-to-employer transition rates and migration rates are shown in Appendix Table A1.

<sup>18</sup>For CPS data with the same state-based sample selection criteria, see Appendix Figure A4, which looks virtually the same as Figure 5, with the CPS migration rates being only slightly lower. Appendix

Table 1 compares residential migration, economic migration, and rates of job change in the CPS and LEHD data for 2000 and 2010. Overall interstate migration rates fell by half between these years in the CPS, compared to a much smaller decline (one-fifth) in the LEHD data. However, both series show similar declines in migrations for new job opportunities. Economic migration fell from 0.9% in the CPS and 0.8% in the LEHD data for 2000 to 0.5% in each for 2010. The fall in economic migration explains three-fifths of the relatively small decline in overall migration in the LEHD data. Fewer moves to new job opportunities explains a smaller fraction (almost one-half) of the larger decline in residential migration in the CPS.

Also shown in Table 1 are detailed breakouts of migration rates by reason for migration in the CPS. Migrations for family, housing, and other reasons account for more than half of migrations in the CPS in 2000. “New job/job transfer” is the most frequent single reason for moving. Other economic motives for migrating (“other job-related” and “lost job/job search”) comprise a very small share of migrations. The decline in migration for non-economic reasons is nearly as large that of economic migration in the CPS. This contrasts with the LEHD data, where the decline in non-economic migration is much smaller than that of economic migration.

## 5 Why Did Migration Rates Decline between 2000 and 2010?

### 5.1 The Role of Composition Changes

In this section we explore mechanisms that may have affected interstate migration overall and economic migration specifically. We begin with a shift-share analysis following Hyatt and Spletzer (2013) and Decker et al. (2014). Formally, this decomposition can be expressed as:

---

Figures A5 and A6 provide analogues of these interstate and economic migration rates at the MSA and county levels, respectively, and are very similar to Figure 5 apart from expected level differences. Note that the LEHD economic migration rate series for substate geography relies on imputation for employers with multiple establishments in a single state, see Abowd et al. (2009), so we expect our so-constructed MSA- and county-level economic migration rates to be biased upward by a small amount.

$$\Delta Y_t = \sum_i \Delta S_{it} \bar{Y}_i + \sum_i \Delta Y_{it} \bar{S}_i$$

where  $\Delta Y_t$  is the change in the migration rate from 2000 to 2010,  $i$  represents each group within a demographic category (e.g. age),  $Y_i$  is the average transition rate for each  $i$ ,  $S_i$  is the average share of each  $i$ ,  $\Delta Y_{it}$  is the change in the transition rate for each  $i$ , and  $\Delta S_{it}$  is the change in the share of individuals within each  $i$ . The first component of the right-hand side captures the fraction of the change attributable to compositional changes, or explained variation, while the second component captures the fraction attributable to within-group changes, or unexplained variation.

Using both the CPS and LEHD data, we decompose residential and economic migration by age, gender, race and ethnicity, education, as well as by employment characteristics, the results of which are shown in Table 2. Compositional shifts in age contribute the most among demographic characteristics to the change in residential migration in both data sources: 7.1% in the CPS and 15.5% in the LEHD. This finding is consistent with the aging of the U.S. population and older people being less likely to move. A similar effect attributable to the aging of the workforce explains changes in the economic migration rate: 9.1% in the CPS and 12.0% in the LEHD. Other demographic characteristics have little explanatory power. This is consistent with the findings of Hyatt and Spletzer (2013) and Molloy et al. (2016) that the aging U.S. population helps explain declines in employment reallocation and population migration rates.

There are differences in the explanatory power of employment characteristics between the CPS and the LEHD. Although Table 1 shows that most of the considered economic categories explain little of the change in residential migration, employment characteristics naturally explain more of the change in the economic migration rate. Changes employment rate explains 1.8% of this decline in the CPS, contrasted with 11.4% to 24.6% in the LEHD. This large difference likely arises from the way we define an economic migration in the LEHD: we use employment change during a residential move to define economic migration, which is more likely to include someone who was previously employed. Firm characteristics have only a small ability to explain migration changes in both the CPS



and LEHD, and are calculated only for the subset of workers with positive earnings.<sup>19</sup> This suggests less of a role for declining entrepreneurship (i.e., changes in the firm age distribution) in changing migration than Hyatt and Spletzer (2013) and Decker et al. (2014) documented for job and worker reallocation rates. Overall, these decompositions provide further evidence that most of the change in interstate migration rates should be attributed to changes in migration behavior within demographic and employment groups rather than changes in composition.

## 5.2 Returns to Migration

We now address whether the changes in economic migration might be associated with differential returns to migration. The LEHD has a record of each worker’s longitudinal earnings history, which allows us to measure earnings changes associated with economic migrations. We calculate the log earnings changes associated with an interstate job move and compare them to earnings changes associated with all other job changes. For the subset of workers who have a state-to-state, employer-to-employer transitions for a pair of years that indicate residential migration, we take the quarter of job change as the time the migration occurred.

Figure 6 shows annual log earnings changes from 2000 to 2010 associated with two types of labor market transitions: interstate employer-to-employer transitions that involved a change in state of residence, and employer-to-employer transitions that do not involve a change in the worker’s state of residence. As a baseline, those who are continuously employed for two years at the same employer but do not change employers, which we call “job stayers,” are also shown. The difference in log earnings is a measure of the percentage change in earnings, and so is straightforward to interpret. Job stayers have far lower earnings increases, which dip down to below zero during the height of the Great

---

<sup>19</sup>It is possible to code the non-employed, who by definition do not have a firm size, age, or industry. When we did such tabulations (not reported), we found effects similar in magnitude to that of employment. These changes were driven by changes in the non-employed category rather than changes in the firm size, firm age, or industry groups, hence we only report decomposition results for workers with positive earnings for categories that report the results of a firm characteristic. All other decompositions are done on the full population age 16-64.

Recession. Consistent with the evidence in Hyatt and McEntarfer (2012), workers who undergo employer-to-employer transitions see substantial increases in earnings, and these earnings increases are highly procyclical. In the years 2000, 2005, and 2010, earnings increased by about 15% for workers who changed jobs but did not change their state of residence. This change fell to 9% during the 2001 recession and 4% during the 2007-2009 recession.

Individuals who changed both states of work and residence also had procyclical earnings changes, which were smaller, in the range of 3% to 14%. It initially seems counter-intuitive that interstate migrants have lower earnings increases than non-migrants since there is a positive cost to moving. However, migrants have substantially higher earnings (by 30%-40%) than non-migrants while at the same time experience approximately the same earnings change in absolute terms as non-migrants. Ultimately, Figure 6 does not provide strong evidence of a trend decline in the returns to economic migration.<sup>20</sup>

## 6 Conclusion

### 6.1 Summary

Recent studies including Hyatt and Spletzer (2013), Davis and Haltiwanger (2014), and Molloy et al. (2017) have suggested a connection between falling migration rates and other evidence that U.S. labor markets are becoming less dynamic. Yet there is reason for caution in drawing connections between declining labor market fluidity and migration. Most migrations are not driven by new job opportunities. Migration rates showed a decline from the 1980s to the 1990s, but many measures of labor market fluidity only show evidence of a decline in more recent decades. The decline in interstate migration has been rather modest since 2000 in most migration statistics. In contrast, post-2000

---

<sup>20</sup>It is possible that these changes in earnings are driven by selection. If the earnings changes associated with migrating are higher for those whose observable characteristics indicate that they are more likely to migrate, then the predicted returns to migration may be constant. Therefore, we conducted two propensity score matching analyses that hold constant the estimated probability of migrating. In Appendix B, we demonstrate that the main features of Figure 6 are robust to this selection correction technique.

trends in employment reallocation show fairly sharp declines, especially during and after the 2007-2009 recession.

Falling interstate migration rates in the CPS have been many recent economic studies, yet its precipitous post-2000 decline also reflects a sharp divergence from other available migration statistics. We use CPS responses matched with administrative records data to explore the reasons that migration falls much more severely in the CPS since 2000. We find that a substantial fraction of CPS respondents who are cross-state migrants in the administrative records data do not report a cross-state move in the CPS, and that this disagreement has grown over time. One conclusion we draw from this analysis is that researchers should use caution when using the CPS for studying how migration has changed in recent decades. Recent improvements to the IRS migration statistics make these highly attractive for studying migration flows, and we hope that future research will give these data additional attention.

Despite disagreement in recent changes to overall residential migration, economic migration rates and trends are remarkably similar in both the CPS and administrative records data. In fact, both data sources suggest sharp declines in economic migration in the first decade of the twenty-first century, consistent with declining rates of job change found in previous research. Changes in the rate of economic migration in the U.S. explain about half of the decline in residential migration in the CPS and three-fifths of the decline in administrative records data. When we investigate whether changes in rates of economic migration are associated with declining returns to migration, we find that the return to migration is procyclical but shows no evidence of a declining trend.

We find that changes in worker demographics and firm characteristics explain only a fraction of the decline in migration across U.S. states, similar to other papers in the literature. If observable characteristics of firms and workers are not driving declining rates of job change and migration, then there are two main alternative explanations. One explanation is that these changes are cyclical and so labor market fluidity can be expected to increase as the economy expands. On the other hand, if there is a long-run decline, then it is possible that changing U.S. labor market institutions increasingly impede labor mar-

ket mobility. The latter explanation has motivated reviews of occupational licensing and non-compete contracts, which may impede labor market fluidity (Davis and Haltiwanger (2014), Economic Report of the President (2015)). Our empirical analysis suggests that recent measured declines in labor market fluidity are more cyclical in nature than a cursory review of the evidence might suggest. If changes in labor market fluidity are mostly cyclical in nature, such policies aimed at directly increasing labor market fluidity may have limited impact.

## 6.2 Directions for Further Research

The willingness of workers to migrate for new job opportunities appears to have changed substantially in recent years, but its causes remain largely unexplained. We provide evidence here that even the substantial decline in residential migration from 2000 to 2010 is not driven by declines in earnings gains from migration or declines in labor market dynamics generally. We also confirm previous findings that changing demographics (in particular the aging of the U.S. population) explain only a fraction of migration declines. More research on this question is clearly needed.

To the best of our knowledge, this paper is the first to use LEHD microdata to study economic migration. We have shown its power to address divergent trends in interstate migration between the CPS and administrative records data, as well as for the study of the returns to economic migration. We believe these data are an underutilized resource for demographers and economists interested in regional labor market dynamics, and encourage other researchers to work with this data. There are two main venues to access LEHD data. One is to apply for access to LEHD microdata through the Federal Research Data Center network.<sup>21</sup> The universe-level microdata allows researchers to study migration over longer time intervals and people who move multiple times. It also provides the opportunity to link to other datasets that include information on business productivity and revenue, as well as other household surveys such as the Survey of Income and Pro-

---

<sup>21</sup>To apply to use these data, please visit [https://www.census.gov/about/adrm/fsrdc/about/available\\_data.html](https://www.census.gov/about/adrm/fsrdc/about/available_data.html). McKinney and Vilhuber (2014) provide a detailed description of the LEHD microdata available for use in approved projects by external researchers.

gram Participation, which contains rich demographic information including marriage and divorce. New public-use statistics present another opportunity. The new Job-to-Job Flow statistics, published by the U.S. Census Bureau, provide quarterly flows of workers across labor markets (states and MSAs) tabulated from LEHD microdata, at a detailed level of firm and worker characteristics.<sup>22</sup> These newly available public-use tabulations also provide information on the earnings changes associated with employer-to-employer transitions across particular cities and states and so provide a rich data source for measuring the returns to migration.<sup>23</sup>

## References

- Abowd, John, Bryce E Stephens, Lars Vilhuber, Fredrik Andersson, Kevin L McKinney, Marc Roemer, and Simon Woodcock (2009), “The LEHD infrastructure files and the creation of the Quarterly Workforce Indicators.” In *Producer Dynamics: New Evidence from Micro Data* (J. Bradford Jensen Timothy Dunne and Mark Roberts, eds.), 149–230, University of Chicago Press, Chicago, IL.
- Blanchard, Olivier and Lawrence Katz (1992), “Regional evolutions.” *Brookings Papers on Economic Activity*, 1, 1–75.
- Cooke, Thomas (2011), “It’s not just the economy, declining migration and the rise of secular rootedness.” *Population, Space, and Place*, 17, 193–203.
- Cooke, Thomas (2013), “Internal migration in decline.” *The Professional Geographer*, 65, 664–679.
- Dahl, Gordon (2002), “Mobility and the return to education: Testing a Roy model with multiple markets.” *Econometrica*, 70, 2367–2420.
- Davis, Steven and John Haltiwanger (2014), “Labor market fluidity and economic performance.” Technical report, National Bureau of Economic Research.

---

<sup>22</sup>Hyatt et al. (2014) provide an overview of the Job-to-Job Flows tabulations, which are available for download at [https://lehd.ces.census.gov/data/j2j\\_beta.html](https://lehd.ces.census.gov/data/j2j_beta.html).

<sup>23</sup>Hahn et al. (2017) describe these newly released earnings data.

- De Loecker, Jan and Jan Eeckhout (2017), “The rise of market power and the macroeconomic implications.” Technical report, National Bureau of Economic Research.
- Decker, Ryan, John Haltiwanger, Ron Jarmin, and Javier Miranda (2014), “The secular decline in business dynamism in the U.S.” *Manuscript, University of Maryland*.
- Economic Report of the President (2015), “Achievements and challenges in the U.S. labor market.” Available at: [https://obamawhitehouse.archives.gov/sites/default/files/docs/2015\\_erp\\_chapter\\_3.pdf](https://obamawhitehouse.archives.gov/sites/default/files/docs/2015_erp_chapter_3.pdf), last accessed: October 20, 2017.
- Fallick, Bruce and Charles A Fleischman (2004), “Employer-to-employer flows in the U.S. labor market: The complete picture of gross worker flows.” *Manuscript, Federal Reserve Board*.
- Farber, Henry (1999), “Mobility and stability: The dynamics of job change in labor markets.” *Handbook of labor economics*, 3, 2439–2483.
- Frey, William (2009), “The great migration slowdown: Regional and metropolitan dimensions.” *Brookings Metropolitan Policy Program Report*.
- Hahn, Joyce, Henry Hyatt, Hubert Janicki, and Stephen Tibbets (2017), “Job-to-job flows and earnings growth.” *The American Economic Review*, 107, 358–363.
- Haltiwanger, John, Henry Hyatt, Lisa Kahn, and Erika McEntarfer (2017a), “Cyclical job ladders by firm size and firm wage.” *American Economic Journal: Macroeconomics*, forthcoming.
- Haltiwanger, John, Henry Hyatt, and Erika McEntarfer (2017b), “The firm productivity ladder.” *Manuscript, University of Maryland*.
- Hsieh, Chang-Tai and Enrico Moretti (2015), “Housing constraints and spatial misallocation.” Technical report, National Bureau of Economic Research.
- Hyatt, Henry (2015), “The decline in job-to-job flows.” *IZA World of Labor*, 175.

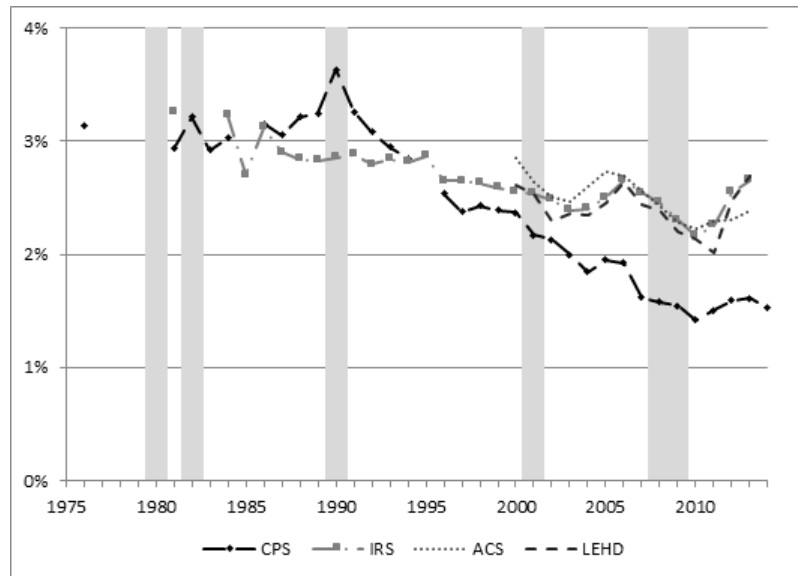
- Hyatt, Henry and Erika McEntarfer (2012), “Job-to-job flows and the business cycle.” *Manuscript, US Census Bureau*.
- Hyatt, Henry, Erika McEntarfer, Stephen Tibbets, and Douglas Walton (2014), “Job-to-job (J2J) flows: New labor market statistics from linked employer-employee data.” In *JSM Proceedings 2014*, 231–245, Business and Economics Statistics Section.
- Hyatt, Henry and James Spletzer (2013), “The recent decline in employment dynamics.” *IZA Journal of Labor Economics*, 2, 1–21.
- Hyatt, Henry and James Spletzer (2016), “The shifting job tenure distribution.” *Labour Economics*, 41, 363–377.
- Internal Revenue Service (2012), “2011-2012 migration data users guide.” Available at: <https://www.irs.gov/pub/irs-soi/1112inpublicmigdoc.pdf>, last accessed: May 19, 2016.
- Kambourov, Gueorgui and Iouri Manovskii (2008), “Rising occupational and industry mobility in the united states: 1968–97.” *International Economic Review*, 49, 41–79.
- Kaplan, Greg and Sam Schulhofer-Wohl (2012), “Interstate migration has fallen less than you think: Consequences of hot deck imputation in the current population survey.” *Demography*, 49, 1061–1074.
- Kaplan, Greg and Sam Schulhofer-Wohl (2017), “Understanding the long-run decline in interstate migration.” *International Economic Review*, 58, 57–94.
- Karahan, Fatih and Serena Rhee (2017), “Population aging, migration spillovers and the decline in interstate migration.” *Manuscript, Federal Reserve Bank of New York*.
- Koerber, Kin (2007), “Comparison of ACS and ASEC data on geographic mobility: 2004.” *Manuscript, US Census Bureau*.
- Leggieri, Charlene, Arona Pistiner, James Farber, et al. (2002), “Methods for conducting an administrative records experiment in Census 2000.” In *Proceedings of the Survey Research Methods Section, American Statistical Association*.

- Lent, Janice, Stephen Miller, and Patrick Cantwell (1994), “Composite weights for the Current Population Survey.” In *Proceedings of the Section on Survey Research Methods*, 867–872, American Statistical Association.
- McKinney, Kevin and Lars Vilhuber (2014), “LEHD infrastructure files in the Census RDC: Overview.” *Manuscript, U.S. Census Bureau*.
- Molloy, Raven, Christopher Smith, Riccardo Trezzi, and Abigail Wozniak (2016), “Understanding declining fluidity in the U.S. labor market.” Technical report, Board of Governors of the Federal Reserve System (US).
- Molloy, Raven, Christopher Smith, and Abigail Wozniak (2011), “Internal migration in the united states.” *The Journal of Economic Perspectives*, 25, 173–196.
- Molloy, Raven, Christopher Smith, and Abigail Wozniak (2017), “Labor market transitions and the decline in long-distance migration in the U.S.” *Demography*, 54, 631–653.
- Moscarini, Giuseppe and Kaj Thomsson (2007), “Occupational and job mobility in the US.” *The Scandinavian Journal of Economics*, 109, 807–836.
- Nenov, Planem (2015), “Regional reallocation and housing markets in a model of frictional migration.” *Review of Economic Dynamics*, 18, 863–880.
- Ruggles, Steven, Matthew Sobek, Trent Alexander, Catherine A Fitch, Ronald Goeken, Patricia Kelly Hall, Miriam King, and Chad Ronnander (2010), “Integrated public use microdata series: Version 3.0 [machinereadable database]. minneapolis: Minnesota population center [producer and distributor], 2004.”
- Schulhofer-Wohl, Sam (2010), “Negative equity does not reduce homeowners’ mobility.” *Federal Reserve Bank of Minneapolis Quarterly Review*, 35, 2–14.
- Stewart, Jay (2007), “Using march cps data to analyze labor market transitions.” *Journal of Economic and Social Measurement*, 32, 177–197.



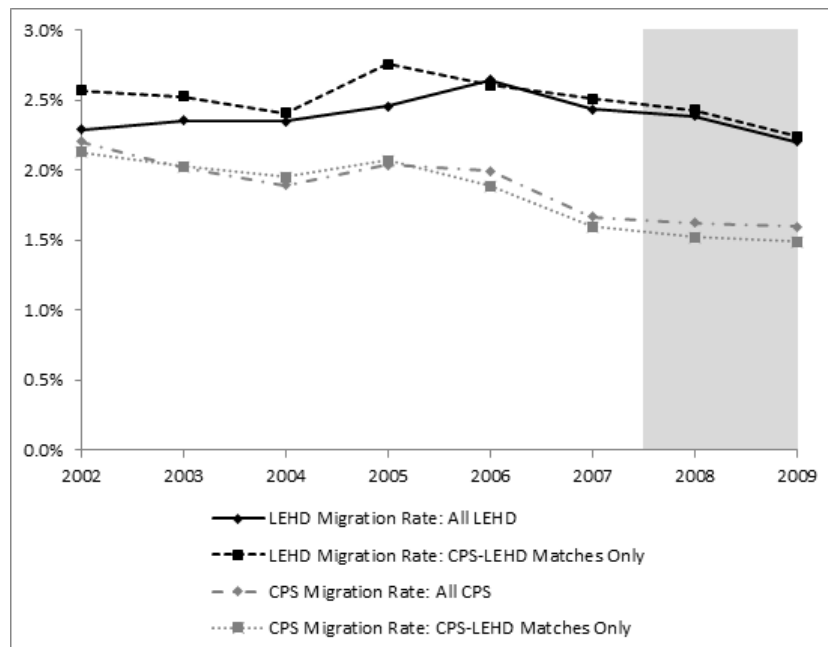
- U.S. Census Bureau (2010), “Weighting and estimation.” Available at: [https://www.census.gov/content/dam/Census/library/publications/2010/acs/Chapter\\_11\\_RevisedDec2010.pdf](https://www.census.gov/content/dam/Census/library/publications/2010/acs/Chapter_11_RevisedDec2010.pdf).
- U.S. Census Bureau (2014), “Survey rules, concepts, and definitions.” Available at: [https://www2.census.gov/programs-surveys/acs/methodology/design\\_and\\_methodology/acs\\_design\\_methodology\\_ch06\\_2014.pdf](https://www2.census.gov/programs-surveys/acs/methodology/design_and_methodology/acs_design_methodology_ch06_2014.pdf).
- U.S. Census Bureau (2017), “Methodology for the United States population estimates: Vintage 2017.” Available at: <https://www2.census.gov/programs-surveys/popest/technical-documentation/methodology/2010-2017/2017-natstcpr-meth.pdf>.
- Valleta, Robert (2013), “House lock and structural unemployment.” *Labour Economics*, 25, 86–97.
- Wozniak, Abigail (2010), “Are college graduates more responsive to distant labor market opportunities?” *Journal of Human Resources*, 45, 944–970.
- Yellen, Janet (2014), “Labor market dynamics and monetary policy.” Available at: <https://www.federalreserve.gov/newsevents/speech/yellen20140822a.htm>, last accessed: October 20, 2017.

**Figure 1: Interstate Residential Migration Rates**



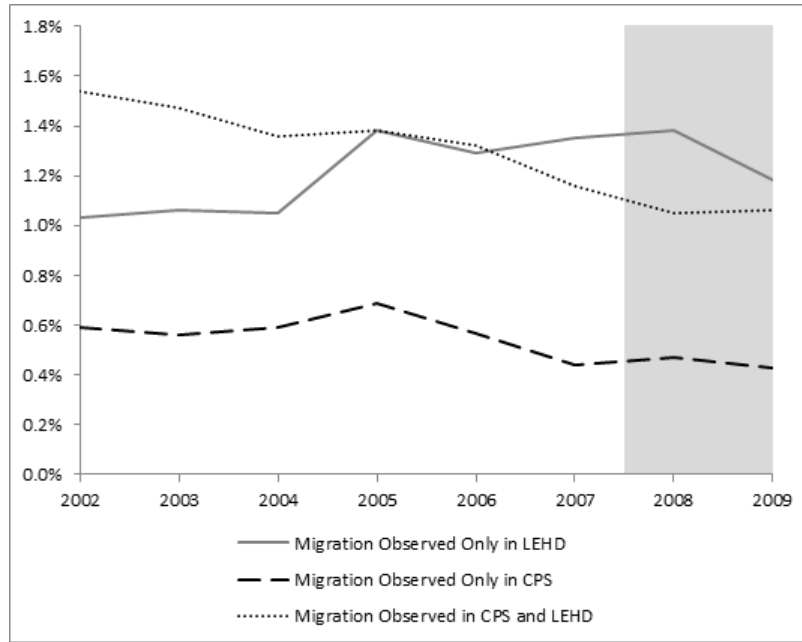
*Notes:* Shaded areas denote recessions as determined by the National Bureau of Economic Research. Authors' tabulations of Current Population Survey (CPS), American Community Survey (ACS), and the Longitudinal Employer-Household Dynamics (LEHD) microdata, as well as published tabulations of Internal Revenue Service (IRS) data. CPS, ACS, and LEHD migration rates are calculated for the population age 16-64.

**Figure 2: CPS and LEHD Migration Rates vs. Matched CPS-LEHD Subset**



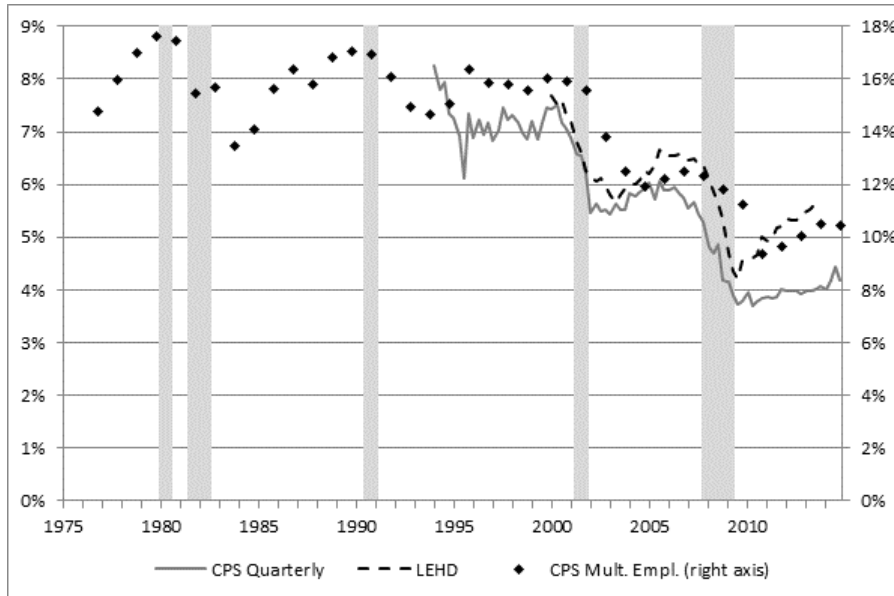
*Notes:* The “CPS-LEHD Matches” are CPS ASEC respondents for a given year, who match to LEHD and have residential information for that year, the three previous years (i.e., the year pair for which states of residence are compared to determine migration, plus the two previous years), and the two subsequent years. All series are calculated for the population age 16-64 in the reference year.

**Figure 3: Matched CPS-LEHD Migration Rates**



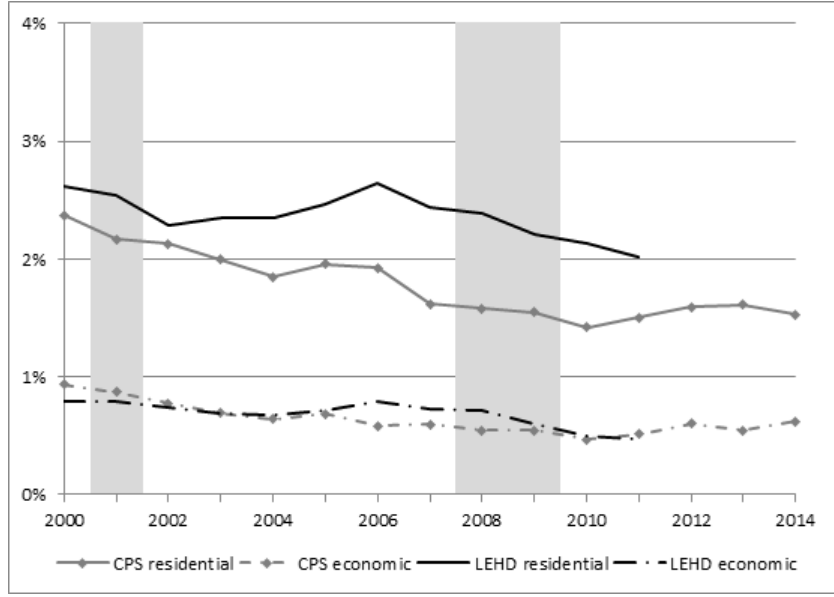
*Notes:* CPS ASEC respondents for a given year age 16-64 who match to LEHD and have residential information for that year, the three previous years (i.e., the year pair for which states of residence are compared to determine migration, plus the two previous years), and the two subsequent years.

**Figure 4: Employer-to-Employer Transition Rates**



*Notes:* Shaded areas denote recessions as determined by the National Bureau of Economic Research. Quarterly data are seasonally adjusted. CPS monthly data are converted to quarterly via addition following Hyatt and Spletzer (2013). The second and third quarters of 1995 are missing one month each due to changes made between June and August in the CPS monthly files. The CPS multiple employers series is constructed from the CPS ASEC and coded to the first quarter, and measures the rate of respondents reporting two or more employers in the last year.

**Figure 5:** Interstate Migration, Residential and Economic



Notes: Shaded areas denote recessions as determined by the National Bureau of Economic Research.

**Figure 6:** Change in Log Earnings



Notes: For each category, a point represents the median difference of: log earnings for one year after the quarter minus log earnings one year prior to the quarter. The sample is initially restricted to workers who have earnings every quarter for 4 quarters prior to a quarter of interest and 4 quarters after. The “Job Stayers” Sample are workers who stayed at the same job during these two years around the quarter. “Job Switchers Any, No Interstate Residential Move” are workers who had any dominant employer-to-employer transition during that quarter, and who did not have an interstate residential move. “Job Switchers Cross-State, Interstate Residential Move” are workers who had a dominant employer-to-employer transition across two states during that quarter, and who did had an interstate residential move. Shaded areas denote recessions as determined by the National Bureau of Economic Research.

**Table 1:** Employment Migration and Employer-to-Employer Transitions

	2000	2010	% pt change	Proportionate change
<b>LEHD</b>				
Emp-to-Emp Transition Rate (Qtr)	7.3%	5.0%	-2.3%	-37.3%
Interstate Migration Rate	2.6%	2.1%	-0.5%	-20.1%
Economic Migration Rate	0.8%	0.5%	-0.3%	-45.5%
<b>CPS</b>				
Multiple Employers Rate (Annual)	15.4%	10.8%	-4.7%	-35.2%
Emp-to-Emp Transition Rate (Qtr)	6.9%	3.8%	-3.2%	-59.2%
Interstate Migration Rate	2.5%	1.5%	-1.0%	-50.2%
<i>CPS Migration Reason</i>				
New job/job transfer	0.9%	0.5%	-0.5%	-67.0%
Lost job/job search	0.1%	0.1%	0.0%	2.5%
Other job-related	0.2%	0.1%	-0.1%	-67.2%
Family	0.6%	0.4%	-0.2%	-40.0%
Housing	0.3%	0.1%	-0.1%	-53.2%
Other	0.4%	0.3%	-0.1%	-37.3%

<sup>a</sup> All series annual unless denoted except for employer-to-employer transition rates, which are quarterly and labeled by (Qtr.). Rates are calculated for individuals ages 16-64, excluding those in the Armed Forces and residing in group quarters, and any observations in the CPS with allocated or imputed migration values. Within the CPS, gross residential rates are weighted with the supplement weight. We calculate annual job change rates in the CPS ASEC using the method outlined in Farber (1999). The LEHD employer-to-employer transition rate includes both within-quarter and adjacent-quarter transition of a worker's dominant job (i.e. the job associated with the highest earnings), see Hyatt and McEntarfer (2012). The denominator is the total number of dominant jobs. We report the employer-to-employer transition rate from the first quarter of 2000 and the first quarter of 2010 after seasonal adjustment. Interstate migration is calculated from the LEHD data. The "Proportionate change" column reports the difference between the rate in 2010 and in 2000, divided it by the average of the rate in 2000 and in 2010. Some percentage point do not equal the difference in columns due to rounding (differences and proportionate change are exact at two decimal points). CPS migration reason categories follow Kaplan and Schulhofer-Wohl (2017).

**Table 2:** Decomposition of Residential and Economic Migration Rates

	Residential Migration		Economic Migration	
	CPS	LEHD	CPS	LEHD
2000	2.4%	2.6%	0.9%	0.8%
2010	1.5%	2.1%	0.5%	0.5%
Change	-0.9%	-0.5%	-0.5%	-0.3%
% of change explained by:				
<i>Worker Characteristics</i>				
Gender	0.0%	0.4%	0.0%	0.2%
Age	7.1%	15.5%	9.1%	12.0%
Race and Ethnicity	1.3%	0.8%	1.1%	1.2%
Education	-4.7%	-0.1%	-7.8%	0.4%
Employment, Previous Year	—	-1.9%	—	11.4%
Employment, Subsequent Year	-4.2%	-1.2%	1.8%	24.6%
<i>Firm characteristics</i>				
Industry, Previous Year	—	-2.3%	—	-1.1%
Industry, Subsequent Year	-1.1%	-1.4%	0.1%	-0.3%
Firm Size, Previous Year	—	-0.5%	—	-1.2%
Firm Size, Subsequent Year	—	-0.4%	—	-1.0%
Firm Age, Previous Year	—	3.7%	—	0.8%
Firm Age, Subsequent Year	—	4.7%	—	2.1%

<sup>a</sup> We group age into the following groups: 16-18, 19-21, 22-24, 25-34, 35-44, 45-54, and 55-64. We group race and ethnicity into Hispanic of any race, White and not Hispanic, Black and not Hispanic, Asian and not Hispanic, and a final category that includes those who are not Hispanic and any other race or more than one race. We group education into less than high school, high school, some college, and college and beyond. Industries are grouped into NAICS supersectors. Industry in the administrative records data refers to the industry associated with the workers dominant job. Similarly, we use the firm size and age of the dominant job prior to migration for the Firm Size and Firm Age categories, respectively. We group firm age into the following groups of years: <1, 2-3, 4-5, 6-10 and, >10. We group firm size into the following numbers of employees: <20, 20-49, 50-249, 250-499, and >499. We classify an interstate residential migration as workers in the LEHD who resided within a different state the subsequent year. The CPS ASEC is used for the CPS migration rates. Both shares and rates are weighted with the CPS supplement weight.

## A Supplemental Tables and Figures

**Table A1:** Correlations Between Migration and Employer-to-Employer Measures

Correlations: 1981-2014							
	CPS Migration	IRS Migration	CPS Multiple Employers				
CPS Migration	1.000						
IRS Migration	0.841	1.000					
CPS Multiple Employers	0.867	0.703	1.000				
Correlations: 2000-2014							
	CPS Migration	IRS Migration	CPS Multiple Employers	ACS Migration	LEHD Migration	LEHD Emp-to- Emp	CPS Emp- to-Emp
CPS Migration	1.000						
IRS Migration	0.665	1.000					
CPS Multiple Employers	0.916	0.749	1.000				
ACS Migration	0.835	0.859	0.816	1.000			
LEHD Migration	0.688	0.917	0.768	0.890	1.000		
LEHD Emp-to- Emp	0.820	0.865	0.835	0.951	0.868	1.000	
CPS Emp- to-Emp	0.915	0.800	0.910	0.951	0.856	0.933	1.000

<sup>a</sup> Quarterly LEHD and CPS employer-to-employer transition data are annualized by taking an average for each year. Correlations are using the year intervals listed above, with the following exceptions. Migration data are missing from the CPS series for 1985, and are missing from the IRS series for 1982 and 1983, and years 2012 and 2013 are excluded from tabulation because of a significant methodology change that affects those years. The ACS migration and LEHD employer-to-employer transition rate series end in 2013. The LEHD migration series ends in 2011. The LEHD employer-to-employer transition series uses a subset of states that are available in the year 2000, see text for additional details of the construction of each data series. The LEHD and CPS quarterly employer-to-employer transition rates have correlations with the ACS migration rate that distinct at the fifth decimal point and so appear identical due to rounding.

**Table A2:** CPS-LEHD Matches: Migration Observed Only in CPS in Year  $t$

Year	Observed CPS Move Occurs One Year Later in LEHD	Observed CPS Move Occurs One Year Before in LEHD	Border State move observed in CPS, no move in LEHD, but same origin state	Residual
2002	23.2%	11.0%	20.9%	45.0%
2003	26.4%	11.7%	19.2%	42.7%
2004	31.6%	11.7%	23.0%	33.6%
2005	27.1%	9.4%	24.3%	39.3%
2006	32.1%	8.0%	22.4%	37.5%
2007	32.3%	11.2%	20.2%	36.4%
2008	30.6%	10.2%	19.4%	39.8%
2009	29.9%	15.0%	23.1%	32.0%

<sup>a</sup> CPS ASEC respondents for a given year age 16-64 who match to LEHD and have residential information for that year, the three previous years (i.e., the year pair for which states of residence are compared to determine migration, plus the two previous years), and the two subsequent years, who also reported moving across states in the CPS but who did not change residence in the LEHD.

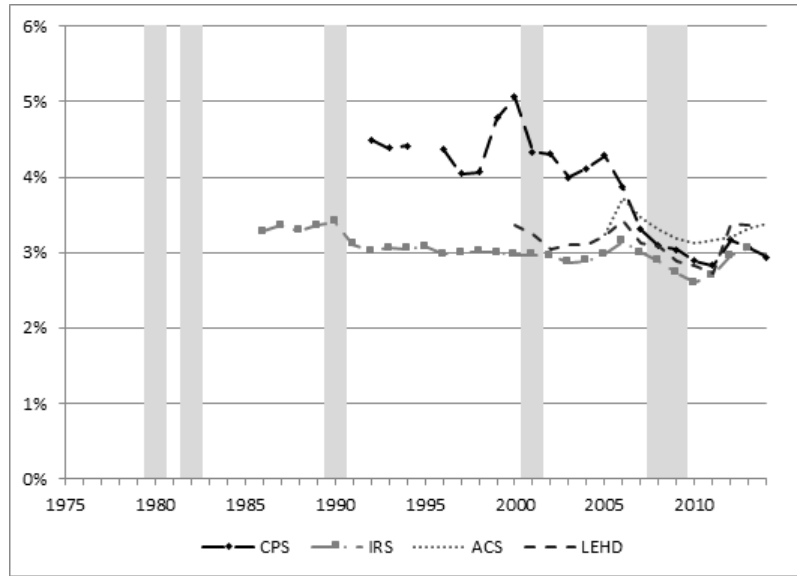


**Table A3:** CPS-LEHD Matches: Immediately Reversed Migration

Year	LEHD migration, No CPS migration	Migration in CPS and LEHD
2002	18.2%	6.8%
2003	15.8%	5.9%
2004	14.9%	7.7%
2005	15.5%	7.6%
2006	12.5%	11.3%
2007	14.9%	7.2%
2008	14.2%	8.8%
2009	17.7%	9.2%

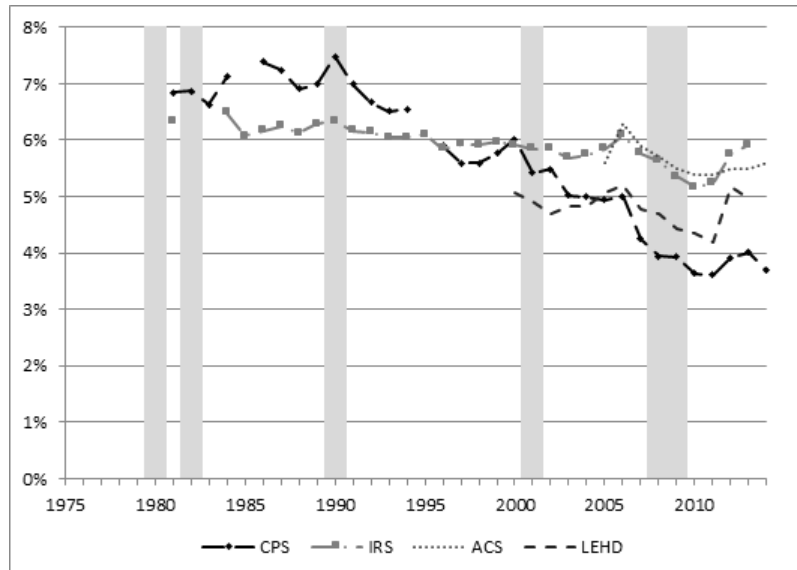
<sup>a</sup> CPS ASEC respondents for a given year age 16-64 who match to LEHD and have residential information for that year, the three previous years (i.e., the year pair for which states of residence are compared to determine migration, plus the two previous years), and the two subsequent years, who also changed residence in the LEHD between the reference year and the prior year. Percentages report the rate at which such moves are immediately reversed: i.e., the state of residence in the years previous and subsequent to the reference year are identical.

**Figure A1: Residential Migration Rates Across MSAs**



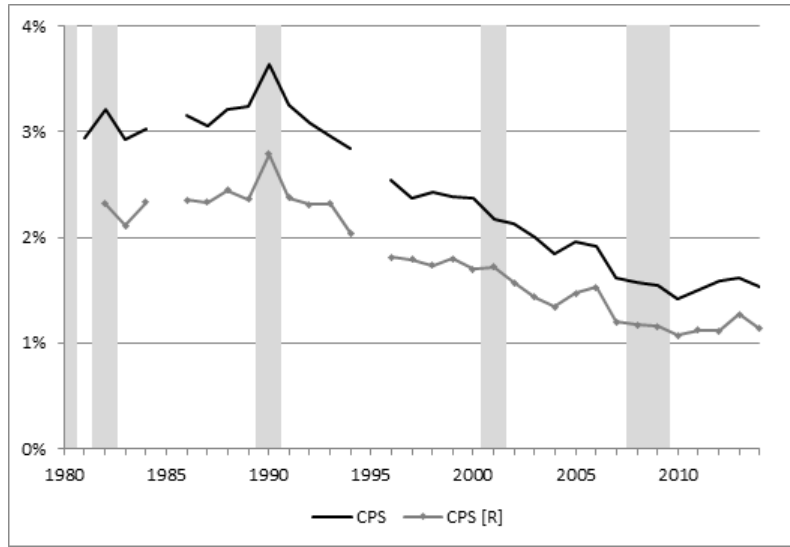
*Notes:* Shaded areas denote recessions as determined by the National Bureau of Economic Research. Authors' tabulations of Current Population Survey (CPS), American Community Survey (ACS), and the Longitudinal Employer-Household Dynamics (LEHD) microdata, as well as published tabulations of Internal Revenue Service (IRS) data. CPS and LEHD migration rates are calculated for the population age 16-64.

**Figure A2: Residential Migration Rates Across Counties**



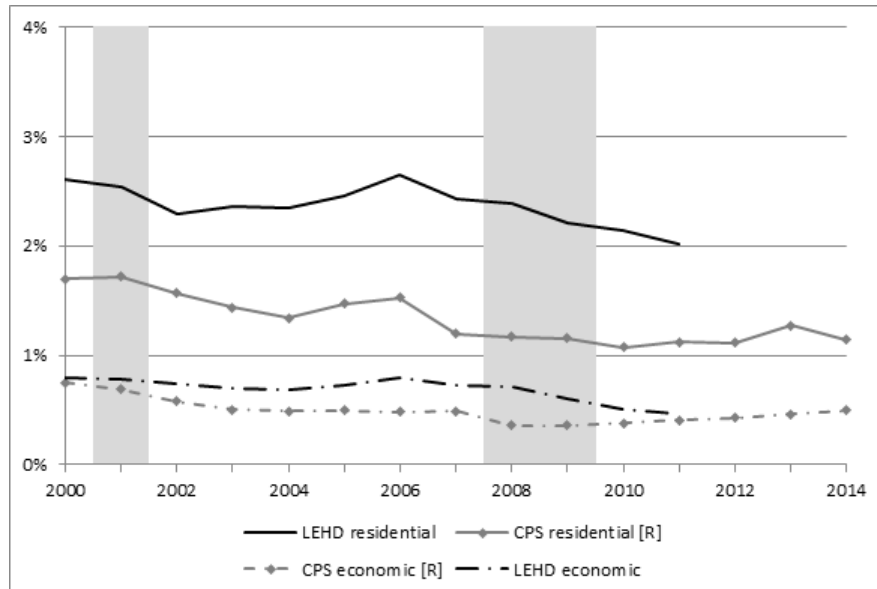
*Notes:* Shaded areas denote recessions as determined by the National Bureau of Economic Research. Authors' tabulations of Current Population Survey (CPS), American Community Survey (ACS), and the Longitudinal Employer-Household Dynamics (LEHD) microdata, as well as published tabulations of Internal Revenue Service (IRS) data. CPS and LEHD migration rates are calculated for the population age 16-64.

**Figure A3:** Comparison of CPS Interstate Migration Rates Series for Subset of States with Consistent LEHD Data



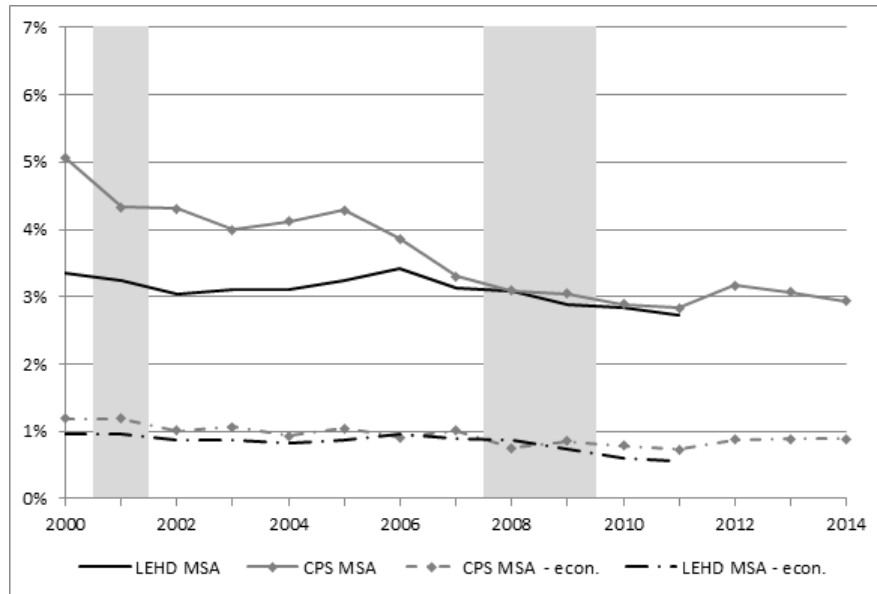
Notes: CPS [R] contains data for the subset of states that have data in the LEHD going back to the year 2000, for comparison of the CPS time series in Figure 1 to the CPS [R] time series in Figure 3. Note that CPS microdata on the particular state of residence is only available starting in 1982.

**Figure A4:** Economic Migration in CPS and LEHD, CPS only for subset of states



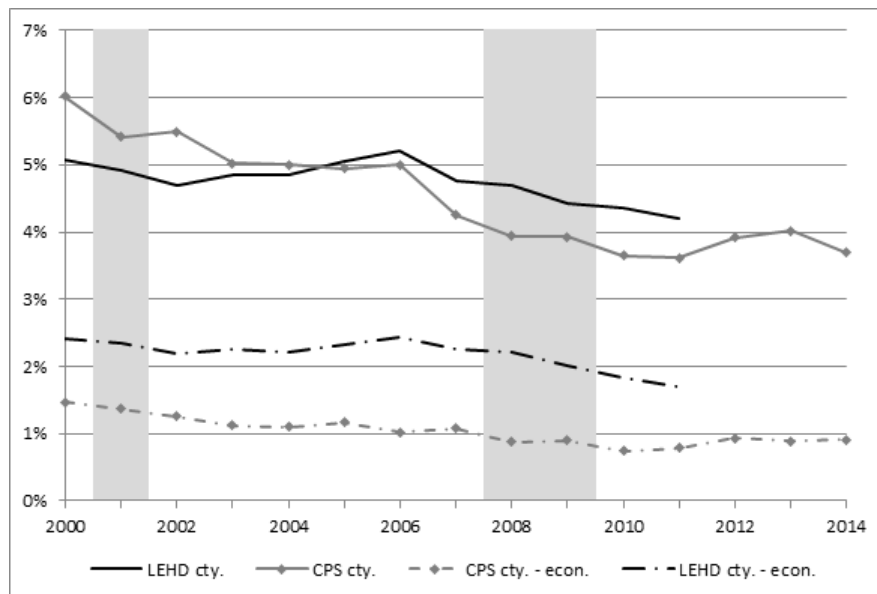
Notes: CPS [R] contains data for the subset of states that have data in the LEHD going back to the year 2000, for comparison of the CPS time series in Figure 1 to the CPS [R] time series in Figure 3. Note that CPS microdata on the particular state of residence is only available starting in 1982.

**Figure A5:** Migration, Residential and Economic, Across MSAs



Notes: Shaded areas denote recessions as determined by the National Bureau of Economic Research.

**Figure A6:** Migration, Residential and Economic, Across Counties



Notes: Shaded areas denote recessions as determined by the National Bureau of Economic Research.

## B Selection and the Returns to Migration

The choice to migrate is endogenous and those we observe to have migrated are workers for whom the benefit exceeds the cost. Therefore we measure whether earnings changes for migrants only affect a smaller subset of those most likely to move, given observable characteristics. Specifically, we use a straightforward propensity-score matching method that assumes selection on observables, that is, conditional on a vector of observable characteristics,  $X$ , the choice of migration is as good as random. We assume that the probability of a cross-state move follows a logit distribution and, using the LEHD data pooled across the years 2000-2010, we estimate:

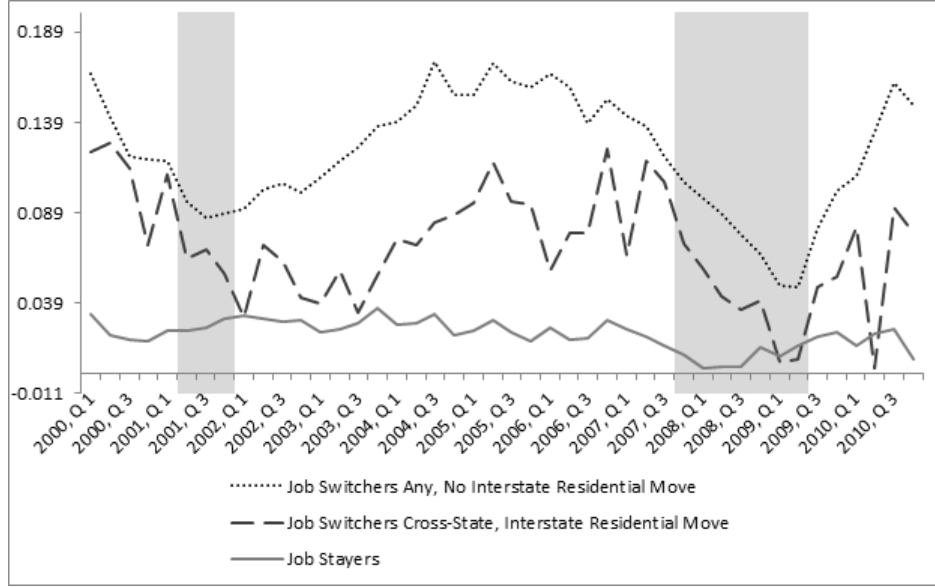
$$Pr(Transition) \equiv \lambda = \frac{1}{1 + \exp(X_i\beta)}$$

where  $X$  includes worker  $i$ 's age, sex, race earnings, and the age, size, industry, and state of the origin employer.

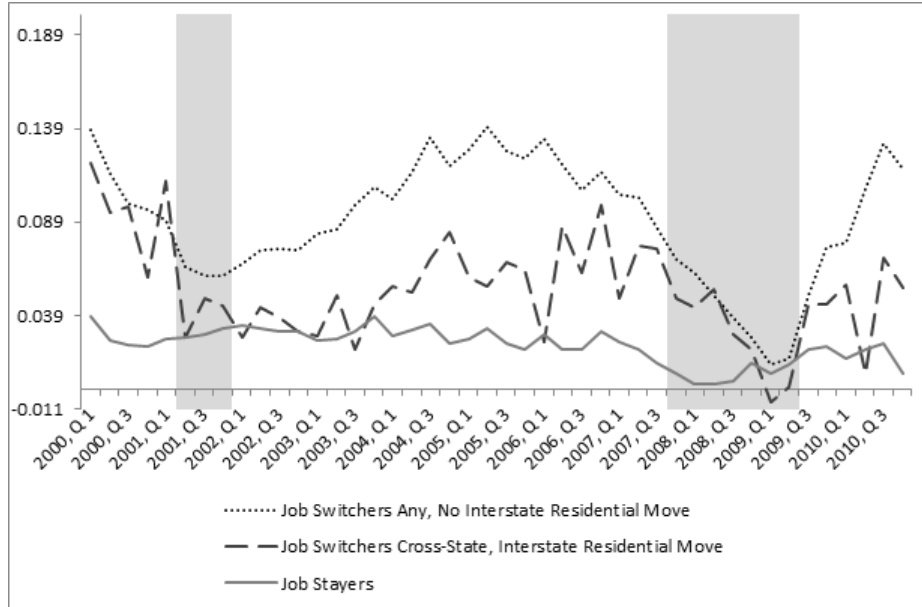
With these predicted probabilities, we match using the set of migrants and non-migrants with overlapping support. The top panel of Figure B1 presents the results. There is some evidence that the gap between job switchers who do not undergo an interstate move and those who do widened during the most recent recession when we control for observables, suggesting there was much less to gain in the economic downturn from switching to a job that necessitated a long-distance move. Overall, the measures exhibit levels and trends that are highly similar to those in Figure 6. The bottom panel of Figure B1 presents matching on the propensity to switch jobs, regardless of location, which produces levels and trends that are even more similar to the original figure. Overall, the returns to migration appear robust to our basic approach to accounting for selection.

**Figure B1:** Change in Log Earnings, Propensity Score Matching

(a) Probability of Interstate Residential Move



(b) Probability of Job Change



*Notes:* Panel (a) matches individuals on the probability of undertaking a residential move conditional on observable characteristics. Panel (b) matches individuals on the probability of undertaking any job change conditional on observable characteristics.